

AMENDMENTS TO THE CLAIMS

Claim 1 (currently amended) A projecting device comprising:

5 a light source for generating an incident light beam;
a reflective image module comprising a plurality of controllable reflective surfaces for modulating the incident light beam and generating a reflected image-containing light beam;

10 a first lens set for concentrating the incident light beam;
a reflective mirror for reflecting the incident light beam from the light source onto the image module through the first lens set; and
a second lens set installed between the light source and

15 the reflective mirror for shortening the optical path from the light source to the reflective mirror;
wherein the optical path of the incident light beam reflected from the image module intersects a plane formed by the optical paths of the incident light beam from the light

20 source to the reflective mirror and from the reflective mirror to the image module at only one point.

Claim 2 (original) The projecting device of claim 1 wherein the first lens set is a positive lens of aspherical plane-convex or aspherical biconvex, and the conic of the

25 positive lens is between -1.2 and -0.45.

Claim 3 (original) The projecting device of claim 1 wherein the second lens set is formed by two positive lenses, and

30 the first and second lens sets satisfy the following conditions:

$$1.1 \leq \frac{|F_A + F_B|}{F_A} \leq 1.7 ,$$

$$0.5 \leq \sqrt{\frac{F_B}{F_{AB}}} \leq 1.1 ,$$

over which F_A is the focal length of the first lens set, F_B is the focal length of the second lens set, and F_{AB} is the combined focal length of the two lens sets.

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Claim 4 (original) The projecting device of claim 1 wherein the incident light beam generated by the light source is concentrated by the second lens set and then the first lens set before it is transmitted to the image module so that the total length of the optical path from the light source to the image module is substantially reduced.

Claim 5 (original) The projecting device of claim 1 wherein the light source comprises a curved reflective mirror for reflecting light generated by the light source toward one direction so as to form the incident light beam of the light source.

Claim 6 (original) The projecting device of claim 1 wherein the light reflecting angle of each of the reflective surfaces of the image module can be separately controlled by the image module so as to generate the image-containing reflected light beam.

Claim 7 (original) The projecting device of claim 6 wherein the image module is a digital micro-mirror device.

Claim 8 (original) The projecting device of claim 1 wherein the image module is a reflective liquid crystal display.

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Claim 9 (original) The projecting device of claim 1 further comprising a rotatable color wheel installed between the light source and the second lens set for altering the color of the incident light beam generated by the light source.

Claim 10 (original) The projecting device of claim 9 wherein
the color wheel comprises a round panel having a plurality
of transparent color filters installed around its periphery
5 for converting the incident light beam into various colored
light beams when the color wheel is rotated.

Claim 11 (original) The projecting device of claim 10 wherein
the color wheel comprises red, green and blue color filters
10 for converting the incident light beam into red, green and
blue incident light beams.

Claim 12 (original) The projecting device of claim 11 wherein
the red, green and blue color filters are sequentially
15 arranged for generating red, green and blue incident light
beams in turn.

Claim 13 (original) The projecting device of claim 1 further
comprising a third lens set installed between the light
20 source and the rotatable color wheel for focusing the
incident light beam generated by the light source onto the
color filters.

Claim 14 (original) The projecting device of claim 1 wherein
25 the first and second lens sets have positive refractive
power.

Claim 15 (original) The projecting device of claim 14 wherein
the first lens set is an aspherical lens and the second
30 lens set comprises a first lens and a second lens wherein
the first lens set and the first and second lenses of the
second lens set each comprises a front side and a rear side,
and the incident light beam emitted from the light source
is transmitted sequentially through the front side of the
35 first lens, the rear side of the first lens, the front side
of the second lens, the rear side of the second lens, the

front side of the first lens set and the rear side of the first lens set.

Claim 16 (original) The projecting device of claim 15 wherein
5 the reference data of the first and second lenses of the second lens set and first lens set are listed below:
the index (the wavelength is $0.587\ \mu\text{m}$) of refraction of the first lens = 1.74,
the index (the wavelength is $0.587\ \mu\text{m}$) of refraction of
10 the second lens = 1.52,
the index (the wavelength is $0.587\ \mu\text{m}$) of refraction of the first lens set = 1.52,
the conic of the first lens set = -0.97,
the radius of curvature of the front side of the first lens
15 = infinity,
the radius of curvature of the rear side of the first lens = 14mm,
the radius of curvature of the front side of the second lens = infinity,
20 the radius of curvature of the rear side of the second lens = 16mm,
the radius of curvature of the front side of the first lens set = -21mm,
the radius of curvature of the rear side of the first lens set = infinity,
25 the thickness of the first lens = 6mm,
the distance from the rear side of the first lens to the front side of the second lens = 1mm,
the thickness of the second lens = 6mm,
30 the distance from the rear side of the second lens to the front side of the first lens set = 70mm, and
the thickness of the first lens set = 17mm.

35 Claim 17 (original) The projecting device of claim 15 wherein the reference data of the first and second lenses of the

second lens set and first lens set are listed below:
the index (the wavelength is $0.587\text{ }\mu\text{m}$) of refraction of
the first lens = 1.74,
the index (the wavelength is $0.587\text{ }\mu\text{m}$) of refraction of
5 the second lens = 1.74,
the index (the wavelength is $0.587\text{ }\mu\text{m}$) of refraction of
the first lens set = 1.52,
the conic of the first lens set = -1.00,
the radius of curvature of the front side of the first lens
10 = 60mm,
the radius of curvature of the rear side of the first lens
= 12mm,
the radius of curvature of the front side of the second
lens = infinity,
15 the radius of curvature of the rear side of the second lens
= 16mm,
the radius of curvature of the front side of the first lens
set = -21mm,
the radius of curvature of the rear side of the first lens
20 set = infinity,
the thickness of the first lens = 6mm,
the distance from the rear side of the first lens to the
front side of the second lens = 1mm,
the thickness of the second lens = 6mm,
25 the distance from the rear side of the second lens to the
front side of the first lens set = 70mm, and
the thickness of the first lens set = 17mm.

Claim 18 (original) The projecting device of claim 15 wherein
30 the reference data of the first and second lenses of the
second lens set and first lens set are listed below:
the index (the wavelength is $0.587\text{ }\mu\text{m}$) of refraction of
the first lens = 1.74,
the index (the wavelength is $0.587\text{ }\mu\text{m}$) of refraction of
35 the second lens = 1.52,
the index (the wavelength is $0.587\text{ }\mu\text{m}$) of refraction of

the first lens set = 1.52,
the conic of the first lens set = -0.97,
the radius of curvature of the front side of the first lens
= infinity,
5 the radius of curvature of the rear side of the first lens
= 15.5mm,
the radius of curvature of the front side of the second
lens = infinity,
the radius of curvature of the rear side of the second lens
10 = 17mm,
the radius of curvature of the front side of the first lens
set = -21mm,
the radius of curvature of the rear side of the first lens
set = infinity,
15 the thickness of the first lens = 6mm,
the distance from the rear side of the first lens to the
front side of the second lens = 1mm,
the thickness of the second lens = 6mm,
the distance from the rear side of the second lens to the
20 front side of the first lens set = 70mm, and
the thickness of the first lens set = 17mm.

Claim 19 (original) The projecting device of claim 15 wherein
the reference data of the first and second lenses of the
25 second lens set and first lens set are listed below:
the index (the wavelength is 0.587 μm) of refraction of
the first lens = 1.74,
the index (the wavelength is 0.587 μm) of refraction of
the second lens = 1.52,
30 the index (the wavelength is 0.587 μm) of refraction of
the first lens set = 1.52,
the conic of the first lens set = -0.97,
the radius of curvature of the front side of the first lens
= infinity,
35 the radius of curvature of the rear side of the first lens
= 18.5mm,

the radius of curvature of the front side of the second lens = infinity,
the radius of curvature of the rear side of the second lens = 17mm,
5 the radius of curvature of the front side of the first lens set = -21mm,
the radius of curvature of the rear side of the first lens set = infinity,
the thickness of the first lens = 6mm,
10 the distance from the rear side of the first lens to the front side of the second lens = 1mm,
the thickness of the second lens = 6mm,
the distance from the rear side the second lens to the front side of the first lens set = 70mm, and
15 the thickness of the first lens set = 17mm.

Claim 20 (original) The projecting device of claim 1 further comprising a projecting module for projecting the light beam reflected by the image module onto a screen.

20 Claim 21 (original) The projecting device of claim 20 wherein the angle formed by the projecting light beam and the normal line of the image module is between 2 to 18 degrees, the angle formed by the optical axis of the first lens set and
25 the normal line of the image module is between 21 to 35 degrees, and the angle formed by a line defined by projecting the optical axis of the first lens set onto the surface on which the image module is located and the normal line of a plane formed by the projected light beam and the normal
30 line of the image module is between -48 to -68 degrees.

Claim 22 (currently amended) The projecting device of claim 1 wherein the incident light beam produced by the light source will be transmitted along the direction of the optical
35 axis of the second lens set, and wherein the angle formed by the optical axis of the second lens set and a plane

~~containing the normal line of the surface formed by the
projecting light beam and the normal line of the image module~~
is between 0 to 15 degrees.

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